

# MARSHALL STAR

In This Week's Star ☐

- › [NASA's Orion Arrives at Kennedy, Work Under Way for First Launch](#)
- › [SUMI Taking a Second Shot at the Sun](#)
- › [Marshall Team Encouraged to Take High Risk Conflict Resolution Training to Learn About Workplace Violence](#)
- › [Trio from International Space Station Lands Safely in Kazakhstan](#)
- › [Marshall Team Members Win Silver Telly Award for NASA DVD](#)
- › [Summer of Innovation Event Shows Fun, Learning Go Hand-in-Hand](#)
- › [International Space Station Program Scientist Offers Research 101 Course to Marshall Center](#)
- › [LGBT Awareness Activity to be Held July 11](#)
- › [MCDC Kids -- and Their Families, Too -- Celebrate the Red, White and Blue](#)
- › [Monthly Emergency Warning Systems Tests to Resume; Next Test Will Be July 5](#)
- › [Obituaries](#)

## NASA's Orion Arrives at Kennedy, Work Under Way for First Launch

*NASA news release*

More than 450 guests at the Kennedy Space Center welcomed the arrival of the agency's first space-bound Orion spacecraft July 2, marking a major milestone in the construction of the vehicle that will carry astronauts farther into space than ever before.

***Image right: The Orion crew module is lowered onto a workstand in the Operations and Checkout Building high bay at the Kennedy Space Center. (NASA/KSC)***

"Orion's arrival at Kennedy is an important step in meeting the president's goal to send humans to an asteroid by 2025 and to Mars in the

2030s," said NASA Deputy Administrator Lori Garver. "As NASA acquires services for delivery of cargo and crew to the International Space Station and other low-Earth orbit destinations from private companies, NASA can concentrate its efforts on building America's next generation space exploration system to reach destinations for discovery in deep space. Delivery of the first space-bound Orion, coupled with recent successes in commercial spaceflight, is proof this national strategy is



working."

Orion will be the most advanced spacecraft ever designed and will eventually be launched on NASA's Space Launch System, managed by the Marshall Space Flight Center, starting in 2017. Orion also will provide emergency abort capability, sustain astronauts during space travel and provide safe re-entry from deep space.

The space-bound Orion will launch on Exploration Flight Test-1, an uncrewed mission planned for 2014. The spacecraft will travel 3,600 miles above the Earth's surface, 15 times farther than the International Space Station's orbital position. This is farther than any spacecraft designed to carry humans has gone in more than 40 years. The primary flight objective is to understand Orion's heat shield performance at speeds generated during a return from deep space.

In advance of the 2014 launch from Cape Canaveral Air Force Station, Fla., a 400-person Orion production team at Kennedy will apply heat shielding thermal protection systems, avionics and other subsystems to the spacecraft. Work also is under way by the Ground Systems Development and Operations team at Kennedy to modify and refurbish facilities used throughout the history of American spaceflight in preparation for the next generation of rockets and spacecraft. This includes the Vehicle Assembly Building, Launch Control Center, launch pad, mobile launcher and crawler-transporter.

"Work is under way on America's next great spacecraft that will surpass the boundaries within which humanity has been held," said William Gerstenmaier, associate administrator for the Human Exploration Operations Mission Directorate at NASA Headquarters. "In a facility that once processed cargo for space shuttles and various components for the International Space Station, hundreds of people at Kennedy are coupling advanced hardware assembly systems with a new human-rated spacecraft designed for deep space travel. It is a fitting testament to the American work force at Kennedy that has enabled the exploration of space for 50 years and is again working on hardware that will extend human presence throughout the solar system."



**event marking the spacecraft's arrival in Florida. (NASA/KSC)**

In 2017, Orion will be launched by the Space Launch System a heavy-lift rocket that will provide an entirely new capability for human exploration beyond low-Earth orbit. Designed to be flexible for launching spacecraft for crew and cargo missions, SLS will enable new missions of exploration and expand human presence across the solar system.

***Image left: From left in foreground, U.S. Senator Bill Nelson of Florida, Kennedy Space Center Director Robert Cabana and NASA Deputy Administrator Lori Garver discuss NASA's first space-bound Orion capsule in Kennedy's Operations and Checkout Building high bay following an***

Across the country, progress is being made on multiple components and capabilities for Orion and SLS. Orion has successfully completed numerous splashdown tests from a variety of angles and speeds, examining how the spacecraft will come to a rest on the ocean at the conclusion of deep space missions. NASA also has conducted a series of parachute tests high above the Arizona desert, demonstrating how Orion will behave under its giant parachute canopy. Software tests have been run between Mission Control Houston and an Orion mockup at Lockheed Martin's Exploration Development Laboratory, allowing flight controllers to learn how the spacecraft's onboard computers operate. Work also continues to build and fine-tune Orion's launch abort system. Lockheed Martin of Palmdale, Calif., is the prime contractor for Orion.

The J-2X upper-stage rocket engine, developed by Pratt & Whitney Rocketdyne of Hartford, Conn., for the future two-stage SLS, is being tested at the Stennis Space Center. The prime contractor for the five-segment solid rocket boosters, ATK of Promontory, Utah, has begun processing its first SLS hardware components in preparation for an initial qualification test in 2013. The SLS core stage, which will be designed and manufactured by The Boeing Co. in Huntsville, has just passed a major technical review and is moving from concept to early design. Boeing has already delivered test bed flight computers to the program and flight software development is under way.

The Orion crew module was built at the Michoud Assembly Facility. The Johnson Space Center manages the Orion Program. SLS is managed by the Marshall Center. NASA's Ground Systems Development and Operations Program is managed by the Kennedy Space Center.

For more information about the Orion Program, visit <http://www.nasa.gov/orion>.

For more information on the Space Launch System, visit <http://www.nasa.gov/sls>.

For more information about the Ground Systems Development and Operations Program at Kennedy, visit <http://go.nasa.gov/groundsystems>.

[› Back to Top](#)

---

## **SUMI Taking a Second Shot at the Sun**

*By Janet Anderson*

How much do you know about the sun? It's hot, round and powers all life on Earth. Pretty impressive! But exactly how the sun's energy ripples, churns and flows out into the solar system remains a mystery. That's why a team of solar physicists and engineers at the Marshall Space Flight Center are launching the Solar Ultraviolet Magnetograph Investigation, or SUMI, for a second time. SUMI is an experimental instrument designed to take unprecedented measurements of the sun's output, providing researchers with a new, better understanding of the sun's ever-changing magnetic field activity.

***Image right: Marshall engineers test SUMI in the National Space Science and Technology Center's high bay. (NASA/Janet Anderson)***

SUMI is slated to launch on a sounding rocket from the White Sands Missile Range on July 5 at 1:54 p.m. CDT. This advanced instrument, built by a team of Marshall solar physicists and engineers, measures the strength and direction of magnetic fields in the transition region.

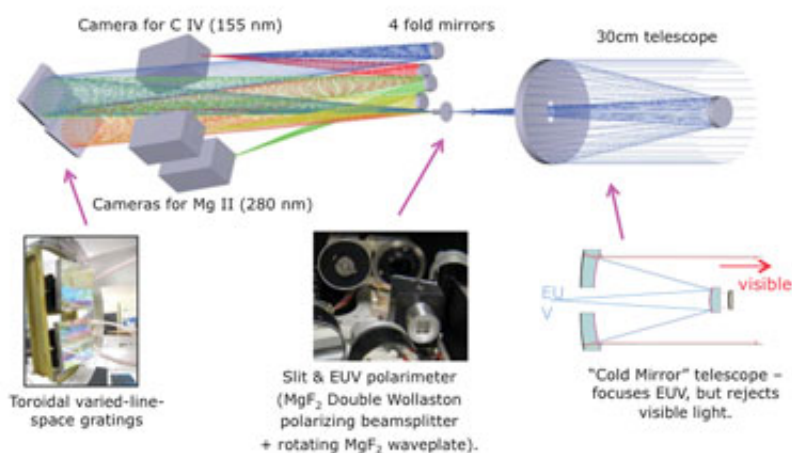
The first SUMI launch took place in July 2010. That mission successfully targeted a sun spot and measured the ultraviolet light emitted by magnesium and carbon ions caught in the magnetic fields of the transition region -- the layer which lies between the sun's surface, or photosphere, and the corona. This transition region is where solar flares erupt and can blast their way toward Earth, potentially overloading ground circuits and impacting life on Earth and in space. Such outbursts seriously impact humanity's ability to expand into space, so understanding and predicting them is critically important.

"We're flying SUMI on a sounding rocket for a second time to refine technology and make adjustments to instruments and their measuring capabilities," said Jonathan Cirtain, principal investigator and heliophysicist at the Marshall Center. "If we're successful, future satellite missions to study the sun can incorporate our technology and hopefully help complete the picture of how the sun's energy transfer mechanisms really work."

SUMI, part telescope and part spectrograph, is designed to capture information from the transition region, which is impossible to see from the ground. For an instrument that is just 22 inches across and 10 feet long, SUMI is basically a complex telescope that images the sun. A small slit allows a beam of light from the sun to pass into the body of the instrument. The light then encounters an intricate device called a wave plate that works like polarized sunglasses to filter the light. As the wave plate rotates, it allows different polarizations of light through. The strength of that polarization is proportional to the direction and strength of the magnetic field.







*The SUMI telescope and spectrograph optical layout (top), the spectrograph gratings mounted in the instrument (bottom left), the slit and double Wollaston beam splitter (bottom center) and a schematic representing the "cold mirror" approach (bottom right).*

In the corona, where the gas pressure is lower, the magnetic field drives the dynamics of the atmosphere. Scientists are not quite sure what happens in the transition layer, where gas dominance is believed to give way to that magnetic field dominance. SUMI's specialized optical components were developed specifically to make exploratory measurements in this region.

**Image left: Graphic of SUMI instrument (NASA)**

During its brief sounding rocket flight, which will carry the instrument 125-185 miles into Earth's atmosphere, SUMI will collect just five minutes' worth of data. Employing a technology similar to that used in polarized sunglasses, SUMI will determine the intensity of emission for multiple degrees of polarization. This will permit characterization of the strength and direction of the magnetic field at several altitudes, as the degree of polarization for the emission source is dependent on the direction and strength of the field.

*Anderson is a public affairs officer in the Office of Strategic Analysis & Communications.*

[› Back to Top](#)

## Marshall Team Encouraged to Take High Risk Conflict Resolution Training to Learn About Workplace Violence

A workplace violence prevention awareness class is now being offered at the Marshall Space Flight Center.

The High Risk Conflict Resolution Training is a four-hour, hands-on seminar where attendees will learn what to do in case they are faced with a critical incident of violence at work.

The class is designed for all Marshall team members, especially supervisors, managers and human resource specialists. Everyone is encouraged to attend.

"This is a great training opportunity in which all can benefit," said Diana Simpson, Marshall's workplace violence prevention program coordinator in the Protective Services Office. "Students will examine previous workplace violence incidents, learn the behavior of offenders, and practice verbal and physical tactics to survive a critical incident of violence in the workplace.

"Everyone wants to be safe in their work environment, she added. "The key to preventing a violent situation from occurring is 'Awareness + Action = Prevention.' This seminar will increase the students' knowledge on what actions to take before and/or during a dangerous event."

Morning or afternoon sessions will be in Building 4627 on Aug. 7, 8 a.m.-noon; Aug. 8, noon-4 p.m.; Aug. 9, noon-4 p.m.; and Aug. 10, 8 a.m.-noon.

It also includes voluntary physical skill drills and practical exercises to overcome conflicts in the office environment. Please wear clothing and footwear suitable for physical activity if you plan to participate.

Team members can sign up for the training through [SATERN](#). For questions, contact Shawn Jayne, captain training coordinator, at 544-1961 or at [shawn.d.jayne@nasa.gov](mailto:shawn.d.jayne@nasa.gov).

[› Back to Top](#)

## Trio from International Space Station Lands Safely in Kazakhstan

Three members of the Expedition 31 crew undocked from the International Space Station and returned safely to Earth on July 1, wrapping up a mission that lasted six-and-a-half months.

***Image right: The Soyuz TMA-03M spacecraft is seen as it lands with Expedition 31 Commander Oleg Kononenko of Russia and Flight Engineers Don Pettit of NASA and Andre Kuipers of the European Space Agency in a remote area near the town of Zhezkazgan, Kazakhstan, on July 1. Pettit, Kononenko and Kuipers returned from more than six months onboard the International Space Station where they served as members of the Expedition 30 and 31 crews. (NASA/Bill Ingalls)***



Russian Commander Oleg Kononenko, NASA Flight Engineer Don Pettit and European Space Agency Flight Engineer Andre Kuipers landed their Soyuz TMA-03M spacecraft in Kazakhstan at 3:14 a.m. CDT after undocking from the space station's Rassvet module at 11:47 p.m. June 30. The trio, who arrived at the station Dec. 23, 2011, spent a total of 193 days in space.

During their expedition, the crew supported more than 200 scientific investigations involving more than 400 researchers around the world. The studies ranged from integrated investigations of the human cardiovascular and immune systems to fluid, flame and robotic research.

Before leaving the station, Kononenko handed over command of Expedition 32 to the Russian Federal Space Agency's Gennady Padalka, who remains aboard the station with NASA astronaut Joe Acaba and Russian cosmonaut Sergei Revin. NASA astronaut Sunita Williams, Russian cosmonaut Yuri Malenchenko and Japan Aerospace Exploration Agency astronaut Akihiko Hoshide will join them July 17. Williams, Malenchenko and Hoshide are scheduled to launch July 14 from the Baikonur Cosmodrome in Kazakhstan.

On June 25, Pettit celebrated achieving one cumulative year in space, combining his time in orbit on Expedition 6, Expedition 30/31 and the STS-126 space shuttle Endeavour flight to the station in November 2008. Pettit now has 370 days in space, placing him fourth among U.S. space fliers for the longest time in space.

During Expedition 31, Pettit also used household objects aboard the station to perform a variety of unusual physics experiments for the video series "Science Off the Sphere." Through these demonstrations, Pettit showed more than a million Internet viewers how space affects scientific principles.

To watch "Science Off the Sphere" videos, visit <http://www.physicscentral.com/sots>.

To follow Twitter updates from NASA's Expedition 31 and 32 astronauts, visit [http://twitter.com/Astro\\_Suni](http://twitter.com/Astro_Suni), <https://twitter.com/AstroAcaba> and [https://twitter.com/Aki\\_Hoshide](https://twitter.com/Aki_Hoshide).

For more information about Expedition 32 and the space station, visit <http://www.nasa.gov/station>.

---

## Marshall Team Members Win Silver Telly Award for NASA DVD



*Three Marshall Space Flight Center team members were honored with a Silver Telly -- the highest Telly Award -- under the film/video category, given annually to honor outstanding local, regional and cable television commercials, programs, and the finest video and film productions. From left, Morgan Abney, an engineer in the Environmental Control and Life Support Systems Development Branch; Anthony Orton, a producer with Marshall Television; and Monsi Roman, a scientist in Marshall's Science & Technology Office, who originated and developed the idea for the project, show off the award they won for the DVD, "What it Takes to Live Away from the Earth." The episode -- targeted for third- to*

*eighth-graders -- describes the life support systems needed to keep humans alive in space. Tellys are one of the most sought-after awards. Winners are selected from thousands of entries from all 50 states and several foreign countries. To view the video, visit [http://www.nasa.gov/multimedia/videogallery/index.html?media\\_id=130830351](http://www.nasa.gov/multimedia/videogallery/index.html?media_id=130830351).*

---

## Summer of Innovation Event Shows Fun, Learning Go Hand-in-Hand



*On stage, Leland Melvin, NASA associate administrator for education and a two-time space shuttle astronaut, gives a presentation to middle school students and their families about the importance of science, technology, engineering and mathematics, or STEM, education. The event was June 21 at a Summer of Innovation event at Dyer Observatory in Brentwood, Tenn. The presentation was accompanied by music performed by Nashville-based, singer-songwriter Beth Nielsen Chapman and The Long Players. Students also participated in a host of other activities, including designing and building a shock-absorbing system -- using paper, straws and marshmallows -- that protects two astronauts when they land. They also learned how planetary features are discovered through remote-sensing techniques. The event was part of a weeklong camp at Dyer, which included a field trip to the Marshall Space Flight Center and the U.S. Space & Rocket Center. This is the second year that Dyer has been a partner in NASA's Summer of Innovation project, a national effort to engage middle school students in STEM education activities during the summer school break.*

*(Special to the Star)*



[› Back to Top](#)

---

## **International Space Station Program Scientist Offers Research 101 Course to Marshall Center**

*By Lori Meggs*

Think you know all there is to know about International Space Station research? If not, this is your chance to learn in a Research 101 course at the Marshall Space Flight Center.

International Space Station Program Scientist Julie Robinson will conduct this course designed for all NASA and contractor employees who are interested in understanding the research and technology development aboard the space station. The station is in the era of utilization as a unique scientific laboratory for conducting microgravity research. Since its first element launch in 2000, the station has had some amazing discoveries in the areas of biology and biotechnology, physical science, human research, Earth and space science. It also serves as an educational platform that continues to inspire students and motivate them in the studies of science, technology, engineering and mathematics. This 90-minute course will highlight some of the most significant accomplishments to date.

"We want to reach folks who are interested in learning how to effectively communicate the space station research accomplishments," said Robinson. "We should all be ambassadors for the station. After the course, participants will be able to understand space station research objectives, both as a National Laboratory and as a platform for international cooperation; understand the funding process for station research; understand why the station is an important platform for



microgravity research in biology, physical science and human research; and understand examples of the benefits of scientific research and technology development that is being conducted on the station."

The session will be held July 10 at 2:30 p.m. in Morris Auditorium. Pre-registration is not required.

*Meggs, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.*

[› Back to Top](#)

---

## LGBT Awareness Activity to be Held July 11

Marshall Space Flight Center's Lesbian, Gay, Bisexual and Transgender, or LGBT, and Friends Professional Collaborative Group will host an awareness activity at 1 p.m., July 11, in Building 4200, Room P110. The guest speaker will be Dr. Daniel Crosby, president of [IncBlot Organizational Psychology](#), a consultancy whose vision is to "flood the Earth with skills for living and leading."

Crosby is currently writing a book titled "You're Not That Great: A Motivational Speech." His firm's clients include Morgan Stanley Smith Barney, RS Funds, Guardian Life Insurance, Grant Thornton and Appleton Learning.

For more information about Marshall's LGBT & Friends Professional Collaborative Group, contact Lynn Motley, the center's employee assistance program coordinator, at [lynn.m.motley@nasa.gov](mailto:lynn.m.motley@nasa.gov) or at 544-7549.

Cake and punch will be served after the presentation. All Marshall team members are invited.

[› Back to Top](#)

---

## MCDC Kids -- and Their Families, Too -- Celebrate the Red, White and Blue



*Children from the Marshall Child Development Center -- along with their families -- celebrated America's birthday with a big parade June 29. The tots -- many in strollers and wagons, or riding bikes, all decorated in red, white and blue -- were met with lots of waves and cheers from spectators along the route. Team members from the Marshall Space Flight Center's Facilities Management Office made signs and provided popsicles and bottled water for the patriotic paraders on the hot day. "What an incredible turnout we had for our Fourth of July parade," said Kelli Wright, director of the Marshall Child Development Center. "I believe this was our biggest one yet!" (NASA/MSFC/Emmett Given)*

[› Back to Top](#)

---

## Monthly Emergency Warning Systems Tests to Resume; Next Test Will Be July 5

The Marshall Space Flight Center's Office of Emergency Management will resume monthly tests of the Emergency Warning System on the first Thursday of every month at 3 p.m.

The next test is scheduled July 5.

The test consists of a generic audio test message only. There will be no need to evacuate or take other protective measures. The reason for these tests is to enable facility managers to identify "dead spots" and/or speakers that need to be repaired. If you cannot hear these test messages, please advise your facility manager.

[› Back to Top](#)

---

### Obituaries

**Freda Summers**, 73, of Huntsville died June 3. She retired from the Marshall Center in 2011 as a technical writer.

**Dan Lagrone**, 85, of Toney died June 13. He retired from the Marshall Center in 1981 as an aerospace engineer technician. He is survived by his wife, Mary Lagrone.

**Henry Parker**, 86, of Huntsville died June 13. He retired from the Marshall Center in 1988 as an electronics engineer.

**Walter L. Quick**, 88, of Cropwell died June 16. He retired from the Marshall Center in 1973 as an aerospace technician.

**Warren Siegfried Jensen**, 74, of Huntsville died June 24. He retired from the Marshall Center in 1991 as an aerospace engineer. He is survived by his wife, Joy Jensen.

**Clyde Donald Bean**, 79, of Huntsville died June 28. He retired from the Marshall Center in 1995 as director of the Human Resources and Support Services Office. He is survived by his wife, Barbara Bonner Bean.

### Find this article at:

<http://www.nasa.gov/centers/marshall/about/star/index.html>